

# SOME NEW PARASITIC HYMENOPTERA WITH NOTES ON SEVERAL DESCRIBED FORMS.

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In this paper will be found descriptions of nine new species of Chalcidoidea and two new species of Serphoidea together with notes on synonymy, distribution and hosts of several described species. The new species described include one species from Japan and two species from Panama, the remainder being from the United States.

## Superfamily CHALCIDOIDEA.

### Family ENCYRTIDAE.

#### PLAGIOMERUS CYANEA (Ashmead).

*Comys cyanea* ASHMEAD, Ent. Amer., vol. 4, 1898, p. 17.

*Eucomys cyanea* DALLA TORRE, Cat. Hymen., vol. 5, 1898, p. 239.

*Habrotopis cyanea* ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1900, p. 404.

This species belongs in the genus *Plagiomerus* Crawford and is very similar to the genotype species, *P. diaspidis* Crawford, if not identical with that species.

Only the type specimen is known. This specimen differs from typical *diaspidis* by having the mesoscutum strongly metallic blue in color instead of bronzy black and the hairs of mesoscutum appear paler in color and somewhat more numerous. Otherwise they appear to be alike.

#### CHEILONEURINUS MICROPHAGUS (Mayr).

*Cheiloneurus microphagus* MAYR, Verh. zool. bot. Ges. Wien, vol. 25, 1875, p. 745.

*Cheiloneurus diaspidinarum* HOWARD, Ins. Life, vol. 7, 1894, p. 256.

*Aphidencyrtus aspidioti* GIRAULT, Ann. Ent. Soc. Amer., vol. 8, 1915, p. 283.

*Aphidencyrtus aspidioti*, var. *britannicus* GIRAULT, Entomologist, vol. 48, 1915, p. 217 (female).

*Cheiloneurinus microphagus* (Mayr) MERCET, Faun. Iber., Encirtidos, 1921, p. 647.

The United States National Museum has recently received through an exchange with Garcia Mercet a female specimen from Fuenterrabia, Spain, determined by Mercet as *Cheiloneurinus microphagus*

(Mayr). Mercet's identification of the species is based upon a supposed Mayr cotype and should be correct, although, as Mercet has pointed out, the cotype differs from Mayr's description in the color of the wings.

As determined by Mercet the species is undoubtedly identical with *Cheiloneurus diaspidinarum* Howard, *Aphidencyrthus aspidioti* Girault, and *Aphidencyrthus aspidioti*, var. *britannicus* Girault.

Howard's description of *Cheiloneurus diaspidinarum* was drawn from two females (only one of which can now be located) reared at Liberty, South Carolina, from *Lepidosaphes ulmi* Linnaeus.

*Aphidencyrthus aspidioti* Girault was described from three females said to have been reared from *Aspidiotus perniciosus* Comstock at Lansing, Michigan. Only the type slide bearing a single female has been located. The variety *britannicus* was described from three females, two of which are in the National Collection on a single slide, and which were reared at Manchester, England, by A. D. Imms from *Lepidosaphes ulmi*.

In connection with the description of *Aphidencyrthus aspidioti*, var. *britannicus*, Girault mentioned specimens which he stated were apparently the males. Two slides bearing the name in Girault's handwriting and data similar to that of the type are in the national collection and undoubtedly constitute the material referred to by Girault. Both specimens are males of *Anabrolepis zetterstedti* (Westwood) and will be further discussed under that species.

Besides the specimens already mentioned, the national collection contains eight card mounted females from the same source as the type material of Girault's variety *britannicus* but not part of the type material and three females labeled "Par. of *Mytilaspis* sp. and *Aspidiotus spurcatus*, Pontvalains, Sarthe, France (P. Marchal)." Also a single female reared from the rose scale (*Diaspis rosae*) from Stanford University, California, by R. W. Doane.

#### ANABROLEPIS ZETTERSTEDTII (Westwood).

*Encyrtus zetterstedtii* WESTWOOD, Philos. Magaz., vol. 10, 1837, p. 440.

*Habrolepis zetterstedtii* MAYR, Verh. zool. bot. Ges. Wien, vol. 25, 1875, p. 752.

*Habrolepis zetterstedtii* ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1900, p. 404.

*Aphidencyrthus aspidioti*, var. *britannicus* GIRAULT, The Ent., vol. 48, 1915, p. 217 (male, in discussion).

*Aphidencyrthus aspidioti* GIRAULT, Psyche, vol. 24, 1917, p. 95 (misidentification of male).

*Anabrolepis zetterstedtii* TIMBERLAKE, Proc. Haw. Ent. Soc., vol. 4, 1920, p. 432.

*Habrolepis zetterstedtii* GIRAULT, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 189.

*Habrolepis zetterstedtii* MERCET, Fauna Iberica, Hymenopteros, Fam. Encyrtidos, 1921, p. 678.

Two females determined by J. C. Crawford as this species are in the National Museum, reared by A. D. Inms at Manchester, England, from *Lepidosaphes ulmi* (Linnaeus). I can see no reason to doubt the correctness of the determination. These specimens were apparently reared from the same material as were the types of *Aphidencyrtus aspidioti*, var. *britannicus* Girault, which species (as represented by the female type) has been shown to be a synonym of *Cheiloneurinus microphagus* (Mayr) (ante p. 2). Two males from the same source which are in the National Museum and which were described by Girault as apparently the males of his var. *britannicus* are, however, undoubtedly males of *Anabrolepis zetterstedtii* instead. Four females in the National Collection labelled "Par. of *Mytilaspis* sp. & *Aspidiotus spurcatus*, Pontvalains, Sarthe, France, P. Marchal" and which have been previously determined, apparently by Ashmead, as *Habrolepis dalmani* (Westwood) are not that species but belong, in my opinion, to the present species.

The species has been recorded from North America by Ashmead (1900) and again by Girault. Ashmead did not indicate the source of his specimens, which have not been located. Girault (1917) recorded two males reared from *Lepidosaphes ulmi* at Monmouth, Maine, under the name of *Aphidencyrtus aspidioti*. Again (1920) he recorded a female from the same host and locality under the name *Habrolepis zetterstedtii*. Girault's specimens, like those of Ashmead, are missing, but there can be little doubt that the males referred to in the first reference are really the same species as the female subsequently recorded, and the identification of the female was probably correct.

In addition to the above records the writer has seen two females labeled as having been reared at Columbus, Ohio, by Robert A. Young from *Diaspis ostreaeformis*. These bear the name label *Habrolepis dalmani*, but appear to be *zetterstedtii*. A single male specimen was recently received from J. McDunnough, of the Canadian Department of Agriculture, and which was reared at Vernon, British Columbia, from *Lepidosaphes ulmi*.

Timberlake (1920) has transferred the species to his new genus *Anabrolepis*, where it apparently belongs.

## Family EUPELMIDAE.

### Genus LECANIOBIUS Ashmead.

*Lecaniobius* ASHMEAD, Proc. Ent. Soc. Wash., vol. 4, 1896, p. 17.

*Zalophothrix* CRAWFORD, Proc. Ent. Soc. Wash., vol. 9, 1908, p. 156.

*Female*.—Head viewed from above strongly transverse, as wide as or wider than the thorax; occiput immargined; posterior orbits rather narrow and receding from the eye-margin; ocelli distant from

the eye and arranged in a low triangle; front ocellus above the antennal groove; viewed from in front the head is broader than high, antennae inserted a little below the lower extremities of the eyes, widely separated at base, the antennal grooves deep and carinately margined, converging above but not confluent being separated above by a sharp carina; lateral margins of the antennal grooves higher than the inner margins and forming, laterad of the antennal fossae, a prominent ledge which curves outward to meet the eye-margin at or near the lower extremity of eye; scape reaching to the front ocellus, curved; flagellum gradually increasing in thickness from pedicel to club; the club obliquely truncate; eyes moderately large, and very faintly pubescent; mandibles tridentate; mesoscutum concave behind, the lateral lobes longitudinally carinate posteriorly; axillae narrowly separated; scutellum convex, rounded behind with a distinct median longitudinal crest of black bristles; marginal vein shorter than the submarginal; stigmal and postmarginal subequal and each approximately one-third as long as marginal; disk of forewing densely ciliated with a transverse fuscous band; front femora distinctly swollen, subtriangular in outline, broadest between middle and apex; middle femora broad, concave beneath; middle tarsi moderately swollen and spined beneath; hind femora not much swollen, their tibiae compressed into a sharp carina behind and bicalcarate; abdomen ovate, not longer than the thorax, the tergites not incised at apex and the ovipositor not or barely exerted.

*Male*.—Unknown.

The above generic description is drawn from the Ashmead and Crawford types and the new species described below. Only two species are known, *cockerelli* Ashmead and the new species. Both species are, so far as known, neotropical in distribution. Crawford<sup>1</sup> has already pointed out that his species, *Zalophothrix mirum*, is a synonym of *Lecaniobius cockerelli* Ashmead.

**LECANIOBIUS CAPITATUS, new species.**

This species is at once distinguished from *cockerelli* by the fact that the head, as viewed from in front, is not nearly twice as broad as high, although distinctly broader than high; the area between the inner eye-margin and the margin of scrobe is nearly as broad at the lower extremity of the eyes as at the upper angle of the scrobe instead of much narrowed below; in dorsal aspect the head is more strongly transverse, the frons much less flattened and more nearly perpendicular; the antennal scape is longer, about six times as long as thick; the general color is much darker.

*Female*.—Length 2.75 mm. Head finely and nearly uniformly shagreened and with conspicuous white pubescence, except on the

<sup>1</sup> Proc. U. S. Nat. Mus., vol. 41, 1911, p. 275.

cheeks and behind the eyes, where the sculpture is more reticulate and the pubescence confined to the upper portion being especially dense along the eye-margin; whole mesoscutum strongly pubescent, the median lobe densely punctate, lateral lobes on outer face a little less strongly sculptured, and the concave posterior portion rather weakly sculptured; scutellum very finely reticulated and opaque and for the most part without pubescence; axillae opaquely punctate and pilose; propodeum weakly sculptured and without pubescence except at the lateral angles which are pilose; mesopleura with fine shallow sculpture, destitute of pubescence on the greater part of the mesepimeron but strongly pubescent anteriorly and ventrally, with an oblique stripe of very dense white pile extending from beneath the anterior wings to the front coxae; legs conspicuously hairy, the hind coxae outwardly above and below densely clothed with white pile; abdomen weakly sculptured all over, bare above but conspicuously hairy beneath. Head black with a slight bluish metallic tinge on frons, the lower part of face and cheeks and the antennal grooves within ferruginous; scape ferruginous, the flagellum brownish black, more or less tinged with ferruginous beneath; thorax mostly black, faintly tinged with bronzy above, more strongly metallic beneath; prothorax, except sternum, ferruginous; scutellum brownish ferruginous at base; legs bronzy black, the anterior and middle trochanters and femora beneath and the front tibiae on the inner side more or less dark ferruginous, the middle femora above with a white spot at the anterior apical angle; middle tibial spur pale ferruginous; all tarsi dark brown, spines on under side of middle tarsi black; forewing medially with a broad blackish transverse band of dark colored cilia which is margined proximally and distally by a narrow contrasting border of white cilia; basad of this band the wing is hyaline except for an elongated patch of dense dark cilia extending obliquely distad and caudad from the base of the submarginal vein but terminating before reaching the median transverse band; apical one-third of wing fusco-hyaline; hind wings entirely hyaline; abdomen bronzy black, purplish at base; exerted tip of ovipositor yellowish-brown.

*Male*.—Unknown.

*Type-locality*.—Las Sabanas, Panama.

*Type*.—Cat. No. 24990, U.S.N.M.

Type and one female paratype reared from a wax scale, *Ceroplastes*, species, collected at Las Sabanas, Panama, by J. Zetek and I. Molino in June, 1921, and bearing their number Z-1502.

These type specimens were evidently reared from the same lot of scale insects as was the type of *Eupelmus cocdivorus* Gahan, described herewith. Four male Eupelmines evidently from the same material were received, also. Owing to the great amount of antigeny

existing in this group I have found it impossible to definitely associate these males with either species and consequently have refrained from describing them until their identity can be more certainly established.

*EUPELMUS COCCIDIVORUS*, new species.

This species resembles closely the description and figure of *E. saissetiae* Silvestri<sup>2</sup> and apparently has the same habit of attacking scale insects, but it may be distinguished by the fact that the ovipositor is much less strongly exerted, and is not dark at tip, the wings appear to be less strongly infumated, the legs are somewhat differently colored and the first tergite seems to be much more deeply incised at apex.

*Female*.—Length 2.75 mm. Head strongly sculptured, the face and cheeks with conspicuous silvery white pubescence; viewed from above, thick antero-posteriorly, twice as broad as long and as broad as the thorax at tegulae; occiput immargined; frons above the scrobes flattened, narrowest at the apex of scrobes where it is narrower than behind the posterior ocelli; ocelli in an equilateral triangle, the ocellocular line equal to the diameter of an ocellus; viewed from in front, the head is slightly broader than high, subtriangular with the vertex nearly straight and the sides and cheeks rounded; antennal grooves deep and sharply defined, confluent above, separated below by a triangular plate which is sharply defined laterally and extends upward more than half the length of scrobes; front ocellus less than its own diameter above apex of scrobes, the latter more finely sculptured within than the remainder of head; eyes nearly circular and covered with very short inconspicuous pile; malar space approximately as long as the rather short scape; scape distinctly shagreened and about four times as long as broad; pedicel approximately two and one-half times as long as its apical breadth, very slightly longer than the third and fourth joints combined; third joint small, about twice as broad as long and about half as long as the fourth; fifth and sixth joints each longer than the fourth and longer than broad; seventh subquadrate; eighth to tenth inclusive slightly broader than long; club 3-jointed, subovate and about as long as the three preceding joints combined. Thorax pubescent, less strongly sculptured than the head, the mesepimeron finely lineolate-reticulate and destitute of pubescence; axillae narrowly separated at base; propodeum laterally and the hind coxae outwardly, except a triangular area down the middle, densely clothed with conspicuous white pubescence; marginal and submarginal veins subequal, post-marginal longer than stigmal, the submarginal with about eleven or twelve stiff bristles dorsally; wings more than ordinarily densely

<sup>2</sup> Boll. Lab. Zool. Agr. Portici, vol. 9, 1915, p. 289.

ciliated on the disk; abdomen about as long as head and thorax, pubescent, the first tergite deeply emarginate at the middle, the second to fifth tergites less deeply so; ovipositor visible from above for a length about equal to the last joint of hind tarsus. Head metallic bluish-green, tinged with coppery on the frons and vertex; antennae black, the scape and pedicel tinged with bronzy; mandibles dark brown with their apices black; palpi pale; thorax mostly bluish-green with a coppery tinge, the scutellum and axillae coppery and the mesepimeron for the most part blackish; abdomen brownish black with coppery and greenish reflections; forewings subhyaline, with the discal ciliation basad of the union of marginal and submarginal veins pale, the ciliation distad of base of marginal vein darker and giving a faint dusky tinge to the wing; all coxae concolorous with the thorax; front legs pale yellowish, except a large brownish or somewhat coppery spot on the apical half of femora beneath; middle legs yellowish with their femora and tibiae more or less fuscous; hind femora, except a pale line along dorsal margin, and the hind tibiae, except at apex, brownish; apical two or three joints of all tarsi brownish; spines on underside of middle tarsi black; ovipositor sheath blackish basally, pale yellowish apically.

*Type-locality*.—Las Sabanas, Panama.

*Type*.—Cat. No. 26175, U.S.N.M.

Type, a female reared from a wax scale, *Ceroplastes*, species collected at Las Sabanas, Panama, by J. Zetek and I. Molino in June, 1921, and bearing their number "Z-1502." A single female paratype is said to have been reared from *Saissetia nigra* Nietner taken at Ancon, Canal Zone, by Mr. Zetek.

### Family APHELINIDAE.

#### APHELINUS SANBORNIAE, new species.

Very similar to *mali* Haldeman but may be distinguished at once by the entirely black abdomen. The forewing basad of the hairless streak bears fewer hairs in the angle behind the marginal vein than does the wing of *mali*, the front tibiae are largely black or at least blackish basally and the ovipositor does not protrude beyond apex of abdomen.

*Female*.—Length, 0.8 mm. Head and thorax smooth and polished; eyes hairy; antennae rather short, six-jointed; the scape spindle-shaped and approximately as long as the pedicel and three funicle joints combined; pedicel about twice as long as broad at apex and not quite as long as the entire funicle; first two funicle joints subequal and each approximately twice as broad as long; third funicle joint distinctly shorter than the pedicel but hardly one and one-half times as long as broad; club approximately equal to the scape in

length; forewing distad of hairless streak thickly ciliated, basad of hairless streak with a single obliquely transverse row of hairs bordering the streak and from three to six similar hairs in the angle formed by the marginal vein and the transverse row of hairs; abdomen triangular, smooth and polished; ovipositor barely visible at apex. Head, thorax, and abdomen shining black; antennal flagellum pale orange yellow, the scape black; legs black with the extreme base and apex of anterior and middle tibiae very narrowly, the hind femora entirely and all tarsi, except at apex, pale yellow; wings hyaline.

*Male*.—Agrees with the female except that the third funicle joint is distinctly longer and thicker than the pedicel, about equal in length to the pedicel and first two funicle joints combined; the scape on the ventral side has three small round tubercle-like sensoria or glands which are visible only in slide mounts under high magnification; and the abdomen is shorter and less distinctly triangular.

*Type-locality*.—Spring Mills, Pennsylvania.

*Type*.—Cat. No. 26176, U.S.N.M.

*Host*.—*Sanbornia juniperi* Pergande.

Described from four females and one male reared by E. A. Hartley, September 16, 1921, from the above named aphid. Antenna of allotype male and wing of a female paratype on one slide and antenna of female paratype on another.

#### APHELINUS JUCUNDUS, new species.

Resembles *semiflavus* Howard but may be distinguished by the yellow face and somewhat shorter third funicle joint. Also resembles *howardi* Dalla Torre but differs from the description of that species in the more extensive and differently arranged ciliation of the forewing.

*Female*.—Length, 1.2 mm. Frons, mesoscutum and scutellum distinctly finely shagreened; the frons nearly opaque; mesoscutum pubescent and more or less shining; propodeum very finely transversely rugulose; abdomen nearly smooth; mesopleura weakly sculptured and shining; hind coxae polished. Eyes hairy; antennal scape slender and approximately as long as the funicle and club combined; pedicel about one and one-half times as long as broad; first two funicle points each about twice as broad as long; third funicle joint subquadrate; club subequal to the combined pedicel and funicle; marginal vein of forewing as long as the submarginal; discal ciliation basad of the hairless streak considerably coarser than that distad, and covering the whole area behind the marginal vein, with a few hairs also in the area behind the submarginal; abdomen ovate, as long as the thorax, the ovipositor slightly exerted. Vertex, frons above, posterior orbits, more or less of cheeks, occiput,



entire thorax, and middle and hind coxae, black; abdomen, except at base, blackish or piceus; antennae entirely, lower part of frons, face, more or less of cheeks, front coxae, all femora, tibiae and tarsi and transverse band at base of abdomen pale yellowish; wings subhyaline.

*Male*.—Unknown.

*Type-locality*.—Whittier, California.

*Type*.—Cat. No. 26177, U.S.N.M.

*Host*.—*Macrosiphum solanifolii* Ashmead.

Described from nineteen card-mounted and five slide-mounted specimens, apparently all females, reared from the potato aphid by H. Compere, February 20, 1922, and received by the Bureau of Entomology from H. M. Armitage. Also two females taken at the same place by E. A. Hartley, who first called the writer's attention to this form.

#### APHELINUS AUREUS, new species.

Agrees very closely with *automatus* Girault but differs in its beautiful bright orange color and in having the scutellum and posterior half of the mesoscutum reticulated instead of shagreened.

*Female*.—Length, 1 mm. Pedicel barely as long as thick; first and second funicle joints small and transverse; third funicle joint subquadrate; club approximately four times as long as the penultimate joint and somewhat thicker than usual. Mesonotum anteriorly granular, the posterior half and the scutellum reticulate, the areas hexagonal or pentagonal and rather large; forewings moderately broad, the marginal and submarginal veins subequal, disk of wing distad of the hairless streak with moderately dense ciliation; basad of the hairless streak with very sparse coarse cilia; abdomen oval with the exerted portion of the ovipositor sheaths about equal in length to the hind metatarsus. Eyes and ocelli dark; head, thorax and abdomen bright orange or golden yellow but with a narrow median line on the mesoscutum and scutellum and the sutures for the most part paler; wings hyaline; the venation and the legs concolorous with the body or only slightly paler.

*Male*.—Similar in every way to the female except that the abdomen is somewhat shorter.

*Type-locality*.—Santa Paula, California.

*Type*.—Cat. No. 26178, U.S.N.M.

*Host*.—*Chaitophorus salicicola* Essig.

Described from a single female and two males mounted on slides and reared by E. O. Essig from the above named host.

The writer at first determined these specimens as *automatus* Girault but after a study of all the species in the National Collection is now convinced that they should be held distinct.

## APHELINUS PERPALLIDUS, new species.

This species differs from all of the other yellowish North American species except *aureus* Gahan and *automatus* Girault by having the ciliation of the forewing basad of the hairless line very sparse and coarse. It differs from both *aureus* and *automatus* by having the first and second funicle joints not transverse but each about as long as broad, the third funicle joint a little longer than broad, and the ovipositor not at all exerted.

*Female*.—Length, 0.9 mm. Antennal club not much thicker than the third funicle joint and about four times as long as that joint; eyes bare or practically so; frons, mesonotum and scutellum distinctly finely shagreened; marginal vein of the forewing slightly shorter than the submarginal or subequal to it; discal ciliation of forewing distad of the hairless line moderately dense and short; basad of the hairless line sparse and irregular, scattered over most of the area behind the marginal vein and much coarser and longer than the cilia beyond the hairless line. Body above very pale greenish yellow; beneath and including all legs nearly white; wings hyaline; venation pale yellowish; antennae pale.

*Male*.—Agrees with female in every way except for the sexual apparatus.

*Type-locality*.—Sioux City, Iowa.

*Type*.—Cat. No. 26179, U.S.N.M.

Described from five females and two males reared by C. N. Ainslie from an aphid on elm. Type female, two paratype females and a broken paratype male card-mounted. Allotype male and three paratype females mounted in balsam.

## APHELINUS MALI (Haldeman).

*Eriophitus mali* HALDEMAN, Penna. Farm. Journ., Aug., 1851, p. 131.

*Aphelinus mali* HOWARD, Rept. U. S. Com. Agr. (1880), 1881, p. 356.

*Aphelinus varicornis* GIRAULT, Psyche, vol. 16, 1909, p. 29.

Three cotype specimens of *varicornis* Girault mounted on slides are in the National Collection and apparently differ in no way from specimens of *mali* Haldeman. The wings show no more infuscation than do those of *mali*, and the ciliation of the forewing proximad of the hairless streak is practically the same despite Girault's statement to the contrary.

## APHELINUS SEMIFLAVUS Howard.

*Aphelinus semiflavus* HOWARD, Ent. News, vol. 19, 1908, p. 367.

*Aphelinus brevipennis* GIRAULT, Descriptiones Stellarum Novarum, 1917, p. 18.

Types of both the above named species are in the National Collection and have been compared. Except for the abbreviated wings, the types of *brevipennis* differ in no way from typical *semiflavus*.

That this difference is not of specific value is apparent from an examination of the 20 specimens constituting the original type series of *semiflavus*. In this series the size of wings vary from normal to scarcely half normal size. The same tendency to vary is shown by a series of specimens reared from *Myzus persicae* Sulzer at Columbus, Ohio, by E. A. Hartley and the same tendency is shown by the three specimens constituting the type series of *brevipennis*. Both sexes show the same tendency to vary in the size of the wings but the reduction is apparently carried to a greater extreme in the male.

In addition to a large number of specimens reared from *Myzus persicae* the National Collection possesses a male and female of this species reared from *Myzus*, species on *Aquilegia*, at Lafayette, Indiana, May 7, 1916, by J. J. Davis.

**APHELINUS LONGICLAVAE Mercet.**

*Aphelinus longiclavae* MERCET, Assoc. Espan. Prog. Ciencias (sep.), 1911, p. 14.

*Aphelinus capitis* RUST, Ent. News, vol. 26, 1915, p. 73.

This species was originally described as a parasite of *Aspidiotus hederæ* Vallot in Spain. *Aphelinus capitis* was described from California where it was said to parasitize a number of different species of scale insects including *Aspidiotus hederæ*. While no European specimens of *longiclavae* have been seen by the writer two cotypes of *capitis* together with three other California specimens reared by E. O. Essig from *Aspidiotus hederæ* have been compared with Mercet's description and seem to agree so perfectly that I have no hesitation in declaring Rust's species to be a synonym.

**APHELINUS CHRYSOMPHALI Mercet.**

*Aphelinus chrysomphali* MERCET, Bol. Real. Soc. espan. Hist. Nat., 1912, p. 135; Trab del Mus. de Cien. Nat. de Madrid, 1912, No. 10, p. 67.

Five slide-mounted specimens reared from *Aspidiotus destructor* Signoret on coconut palm at Rio Pedras, Porto Rico, October 17, 1921, by G. N. Wolcott, have been determined by the writer as this species. The record is interesting as constituting the first identification of this European species from the Western Hemisphere.

**APHELINUS ASHMEADI, new name.**

*Aphelinus howardii* ASHMEAD, Trans. Ent. Soc. London, 1900, p. 264 (not *howardii* DALLA TORRE, Cat. Hymen., vol. 5, 1898, p. 221).

This species was described from a single male specimen from the island of Grenada, West Indies. The type is in the British Museum. If really an *Aphelinus* the species should be easily recognized by the unusually long male antennae.

## APHELINUS MARLATTI (Ashmead).

*Baccharis marlatti* ASHMEAD, Kans. Agri. Exp. Sta. Bull. 3, 1888; Appendix, p. v.

*Aphelinus subapterus* GIRAULT, Ent. News, vol. 27, 1916, p. 405.

Both of the above-cited descriptions are based upon the same three identical specimens. The Ashmead description was apparently unknown to Girault. In addition to the three specimens mentioned as types by both authors the National Collection now contains two other specimens acquired by gift from the Kansas State Agricultural College in 1920, and which were reared by Mr. Marlatt at the same time and from the same source as were the types. Two of the type specimens have been mounted on a slide and ground to fragments beneath the cover-glass by Girault. The actual type specimen is mounted on a card point in good condition except for loss of both antennae, and the pin bears a label on one side of which is written the Ashmead name and on the reverse side the Girault name.

## COCCOPHAGUS LECANII (Fitch).

*Platygaster lecanii* FITCH, 5th Rept. Ins. New York, 1858, p. 25.

*Coccophagus lecanii* SMITH, Amer. Nat., 1878, p. 661; Seventh Rept. State Ent. Ill., 1878, p. 130.

*Coccophagus ater* HOWARD, Rept. Ent. U. S. Dept. Agri., 1880, p. 359.

*Coccophagus cognatus* HOWARD, Rept. Ent. U. S. Dept. Agri., 1880, p. 359.

*Coccophagus flavoscutellum* ASHMEAD, Florida Agri., vol. 4, 1881, p. 65.

*Coccophagus vividus* HOWARD, Bull. 5, Bur. Ent. U. S. Dept. Agri., 1885, p. 25.

With the exception of *flavoscutellum* Ashmead and *cognatus* Howard the above synonymy is that given by Doctor Howard in his Revision of the Aphelininae of North America.

The writer recently had occasion to compare the types of *Coccophagus lecanii* (Fitch), *C. cognatus* Howard, and *C. flavoscutellum* Ashmead, all of which are in the National Collection. After careful comparison and study the conclusion was reached that all three names refer to the same species. Fitch's species is slightly variable as to the extent of the yellow marking on the scutellum and both Howard's and Ashmead's types fall well within the range of this variation and can not be distinguished from *lecanii* otherwise.

The species attacks a long list of Lecaniine and other scale insects and is widely distributed, having been recorded from Europe by Masi<sup>3</sup> and others; from Japan by Nakayama;<sup>4</sup> from Hawaii by Fullaway<sup>5</sup> and in America it is known to occur from the Atlantic to the Pacific and from Florida to Ontario, Canada, as well as in several of the West Indian Islands.

<sup>3</sup> Boll. Lab. Zool. Portici, I, 1907, p. 239.

<sup>4</sup> Philippine Journ. Sci., vol. 18, 1921, p. 98.

<sup>5</sup> Proc. Hawaiian Ent. Soc., vol. 4, 1920, p. 242.

## COCCOPHAGUS OCHRACEUS Howard.

*Coccophagus ochraceus* HOWARD, U. S. Dept. Agr., Div. Ent., Bull. 1, 1895, p. 38.

*Coccophagus bifasciaticorpus* GIRAULT, Soc. Ent., vol. 31, 1916, p. 44.

Types of both the above named species are in the National Collection and are identical in every way. The species is rather easily recognized by reason of its conspicuous dark markings, a large blotch at the middle of pronotum, the entire propodeum, a transverse band on the abdomen sometimes embracing the whole apical half of abdomen being black or blackish and the axillae usually dark brownish. The praescutum is uniformly and closely set with rather coarse hairs, but lacks paired setae except for one pair at the posterior margin just in front of the scutellum; the scutellum has three pairs of setae and is otherwise bare; the female antennae are distinctly clavate, the club distinctly thicker than the funicle and subequal to it in length; the first funicle joint although the smallest joint is somewhat longer than broad, while funicle joints two and three are subequal and each about as long as the pedicel. None of the funicle joints in the female are strongly corrugated. The male is like the female except that the antennae are much longer, the first funicle is the thickest joint, the following joints successively diminishing in thickness and all of the flagellar joints are strongly corrugated.

The types of *ochraceus* were from Alameda County, California, reared from *Lecanium*, species on *Adenostema fasciculatum*. The types of *bifasciaticorpus* were from Cape Town, South Africa, reared from *Lecanium hemisphaericum* Targioni. In addition to the type material the writer has seen specimens from Berkeley, California, sent in by E. O. Essig and from Queenstown, South Africa, collected by E. M. Rust and sent in by Harold Compere, all of which are said to have been reared from *Saissetia oleae* Bernard.

*Coccophagus javensis* Girault is very similar to this species but differs in that the joints of the funicle in the female are all subequal in length and thickness and not narrower than the club which tapers gradually from base to apex and all of the flagellar joints are strongly corrugated. The propodeum is not as dark as in *ochraceus* although more or less fuscous and the axillae are not darker than the scutellum.

## ANERISTUS CEROPLASTAE Howard.

*Aneristus ceroplastae* HOWARD, Can. Ent., 1895, vol. 27, p. 351.

*Aneristus ceroplastae* HOWARD, Psyche, vol. 7, 1896, suppl. p. 18.

*Coccophagus orientalis* HOWARD, Proc. U. S. Nat. Mus., vol. 18, 1896, p. 633.

*Aneristus orientalis* GIRAULT, Bull. Brooklyn Ent. Soc., vol. 12, 1917, p. 88.

*Prococcophagus orientalis* TIMBERLAKE, Proc. Ent. Soc. Haw., vol. 3, 1918, p. 404.

The types of *Aneristus ceroplastae* and *Coccophagus orientalis* have been carefully compared with the result that the writer is of

the opinion that they are the same species. The former was described from specimens parasitic on *Ceroplastes euphorbiae* Cockereill in Jamaica and the latter from specimens reared from *Ceroplastes actiniformis* Green as well as several other species of scale insects in Ceylon.

The species is apparently widely distributed, the national collection containing material from Hawaii; Los Banos, Philippine Islands; St. Croix, Virgin Islands; and Ancon, Canal Zone, in addition to the type localities.

**PROSPALTELLA DIASPIDICOLA** Silvestri.

*Prospaltella diaspidicola* SILVESTRI, Reale Accad. dei Lincei, vol. 18, 1909, p. 564.

*Prospaltella niigatae* NAKAYAMA, Philippine Journ. Sci., vol. 18, 1921, p. 99, pl. 1, fig. 2.

The National Collection contains several slide mounted cotypes of *diaspidicola* Silvestri received from the author through Dr. L. O. Howard. A single slide-mounted cotype of *niigatae* Nakayama is also in the collection. These cotypes have been compared and seem to be identical. The former name was proposed for specimens of a parasite reared from *Aulacaspis pentagona* (Targioni) from South Africa and the latter for a parasite of the same scale in Japan.

The National Collection also contains three slides bearing a large number of specimens said to have been parasites on mulberry scale, Gifu, Japan, reared by U. Nawa, January 30, 1899. The mulberry scale mentioned was doubtless *Aulacaspis pentagona*. One slide in the collection bears two specimens reared from *Aulacaspis pentagona* at Campinas, Brazil, by F. Noack.

This species is quite similar to *berlesei* Howard, but apparently differs by having smaller wings with the marginal fringe a little more than half as long as the greatest wing breadth; the praescutum bears only two pairs of chaetae, the anterior pair being situated approximately midway between the anterior and posterior margins and about as far from each other as from the lateral margins, the posterior pair located just in front of the scutellum; the first dorsal segment of the abdomen is distinctly reticulated at base.

**ENCARSIA FORMOSA**, new species.

This species belongs to the *luteola* group in which the middle tarsi are 4-jointed, the fourth and fifth joints being connate. It differs from *luteola* Howard by having the dorsum of the thorax distinctly, almost opaquely, sculptured, and it is also to some extent darker in color. May be distinguished from *quaintancei* Howard by the wholly black scutellum.

*Female*.—Length 0.6 mm. Antennae rather long and cylindrical; pedicel longer than the first funicle joint, the latter approximately

one and one-half times as long as thick; second, third, and fourth joints subequal and each slightly more than twice as long as thick; club 2-jointed, the joints subequal and each about as long as the fourth funicle joint; occiput distinctly sculptured and the vertex more finely so; mesoscutum, scutellum, and axillae, when viewed through a binocular microscope, with distinct, fine, nearly granular sculpture (mounted in balsam and under a compound microscope this sculpture is seen to be a fine reticulation, the enclosed areas on the middle of the scutellum compressed from the sides and forming elongate longitudinally arranged cells, while elsewhere on the scutellum, as well as on the mesoscutum and axillae, the enclosed areas are irregular and not especially compressed); forewings with the discal ciliation nearly uniform over the whole surface except caudad of the submarginal vein where they are for the most part bare; marginal cilia longest at the posterior apical border of the wing; marginal vein a little longer than the submarginal, the stigmal strongly curved; middle tibial spur about half as long as the basal joint of tarsus; middle tarsi 4-jointed, the fourth and fifth joints connate but with a slight constriction, indicating the original separation; abdomen a little longer than the thorax; rounded at apex, and apparently sculptureless; ovipositor slightly extruded. Antennae, legs, and abdomen pale yellow or nearly white, the antennae very slightly infuscated: face, cheeks, and posterior orbits black; frons, more or less of the vertex, and the occiput above very dark orange yellow or brownish; thorax dull black, with the groove separating axillae from mesoscutum faintly brownish; wings hyaline, venation fuscous; hind coxae blackish at base.

*Male*.—Length 0.6 mm. Antennal pedicel not much longer than broad, much shorter than the first funicle joint which is more than twice as long as thick, about as long as the second funicle joint and somewhat thicker; second, third, and fourth funicle joints and the basal joint of club subequal in length and breadth, about three and one-half times as long as thick; apical joint somewhat shorter; all funicle and club joints with distinct, widely separated, longitudinal striae; structure and sculpture otherwise like the female. Head mostly brownish yellow, darker on the cheeks and below the antennae; thorax blackish with the mesonotal grooves pale yellowish and the abdomen mostly blackish with sutures somewhat yellowish; antennae and legs as in the female.

*Type-locality*.—Twin Falls, Idaho.

*Type*.—Cat. No. 26180, U.S.N.M.

Described from five females and one male mounted on a single slide and received from Ralph H. Smith who is authority for the statement that they are parasitic upon Aleurodidae infesting the leaves of the house geranium; also four females received from A.

Franklin Shull of Ann Arbor, Michigan who states that they were suspected of parasitizing the "common white-fly." Three of the latter specimens mounted on card points, the other one in balsam.

Since the above description was drawn up additional specimens of this species have been received as follows: a large series from Wooster, Ohio, reared by J. S. Houser from pupae of *Trialeurodes vaporariorum* (Westwood) in a greenhouse, February 5, 1923; a large number of specimens reared March 8, 1923, from pupae of the same Aleurodid taken in a greenhouse on the Department of Agriculture grounds at Washington, D. C., by W. H. White.

The host insects from which the type specimens came were not definitely determined but in all probability they were the same species which served as host for the Ohio and District of Columbia specimens.

The parasitized Aleurodid pupae turn black in color and are easily distinguished from healthy pupae which are greenish. The parasite was reported as extremely abundant in both the Wooster, Ohio, and Washington, D. C., infestations.

### Family PTEROMALIDAE.

#### RHOPALICUS PULCHRIPENNIS (Crawford).

*Spintherus pulchripennis* CRAWFORD, Proc. U. S. Nat. Mus., vol. 43, 1912, p. 168.

*Rhopalicus americanus* GIRAULT, Ann. Ent. Soc. Amer., vol. 9, 1916, p. 296.

Types of *Spintherus pulchripennis* Crawford and of *Rhopalicus americanus* Girault are in the U. S. National Museum and have been compared. The two are identical. In the opinion of the writer the species is more properly placed in *Rhopalicus* Foerster than in *Spintherus* Thomson.

#### EUPTEROMALUS COGNATUS, new species.

Very similar to *viridescens* (Walsh) but differs from that species by having the joints of the funicle slightly shorter, the occiput a little more concave, the antennal groove somewhat deeper, the occipital carina very weakly developed, and the punctation of the head and thorax a little stronger.

*Female*.—Length, 2 mm. Head and thorax with the usual reticulate-punctate sculpture common to the group but the punctures slightly deeper than in most of the other species; abdomen shining, with the tergites, except the first, very obscurely reticulated; scutellum sculptured alike all over or with only a very slight indication of a differently sculptured area at apex; propodeum punctate with a weak median carina.

Head viewed from above broader than the thorax; occiput rather deeply concave medially and very weakly margined; posterior



orbits less sharply receding from the eye margins than in most of the other species; viewed from in front the head is perceptibly broader than high (about 6:5), truncate at the mouth, the cheeks rounded and the vertex distinctly though not greatly arched above the eyes; viewed from the side the front profile is weakly convex, the face below the antennae receding only slightly; mandibles each with four teeth; maxillary palpi 4-jointed, the apical joint the longest joint, the penultimate joint the shortest and hardly half the length of the last; labial palpi 2-jointed; antennal scape cylindrical and as long as pedicel, ring-joints and three first funicle joints combined; ring-joints distinct, subequal; funicle joints all subequal and each a little broader than long; club 3-jointed and equal in length to the last three funicle joints combined; mesoscutum about equal in length to scutellum, with the parapsidal grooves present anteriorly but effaced on the posterior one-fourth; scutellum moderately convex or at least not conspicuously flattened as in *dubius* Ashmead; propodeum moderately hairy laterally, the apical neck distinct but rather short, the spiracles elliptical and moderately large; marginal and postmarginal veins practically equal, the stigmal vein shorter; abdomen pointed ovate, not longer than the thorax and usually a little narrower than the thorax; first tergite comprising approximately one-third the total length of abdomen; second tergite a little less than half the first; following tergites shorter. Color of head and thorax dark aeneous; abdomen mostly metallic blue-black with the first tergite metallic green; wings hyaline, venation pale yellowish; antennal flagellum dark brown, scape and pedicel reddish testaceous; coxae concolorous with thorax; all femora brownish testaceous, the tibiae usually a little clearer testaceous and the tarsi still paler.

*Male*.—Length, 1.7 mm. Agrees with female except that abdomen, viewed dorsally, is nearly circular in outline and not over two-thirds as long as thorax, and the funicle joints are all practically as long as broad.

*Type-locality*.—Ballast Island in Lake Erie.

*Type*.—Cat. No. 26181, U.S.N.M.

The type series consists of twenty specimens, many of them more or less broken and imperfect, received from Miss Mary Auten and all reared by her from the egg capsules of spiders. The type, allotype, and several paratypes were reared, according to the collector, from the egg capsules of *Aranea frondosa* Walckenaer taken on Ballast Island in Lake Erie. Other paratypes are said to have been reared from the capsules of *Epeira scolopetaria* Emerton taken on South Bass and Gibraltar Islands in the same lake while two specimens also taken on South Bass Island are said to have come from the capsule of *Philodromus canadensis*.

Judging by host records of related species it seems more probable that this species is actually parasitic upon some dipterous or hymenopterous larva infesting the egg capsules than that it is present as a parasite of the spider's eggs.

### Family EULOPHIDAE.

#### TETRASTICHUS PHILODROMI, new species.

Resembles somewhat *T. dolosus* Gahan but is aeneous black in color instead of bluish, the abdomen in dorsal profile is only slightly longer than broad and less strongly sculptured, and the median groove on mesoscutum as well as the two parallel grooves on scutellum are almost effaced or very poorly developed. The postmarginal vein bears from two to four erect long bristles on the upper side.

*Female*.—Length, 1 mm. Head collapsed, the sculpture of face not discernible, vertex, occiput and posterior orbits delicately reticulate; antennae short, the flagellum not equal in length to the dorso-ventral length of head; scape subcylindrical, approximately equal in length to the pedicel and first two funicle joints; pedicel longer than thick, and longer than the first funicle joint; ring-joints very short, the number not discernible; funicle 3-jointed, the joints subequal and subquadrate; club 3-jointed, pointed ovate, thicker than funicle, and about equal to funicle in length; mandibles distinctly tridentate, the inner tooth somewhat more acute than the other two on account of the deeper incision between it and the second; pronotum, mesoscutum, axillae, and scutellum finely and delicately reticulate, the enclosed areas on the praescutum and scutellum somewhat longitudinally compressed; mesoscutum with the median longitudinal groove very indistinct or absent and the scutellum also practically without grooves although there are faint indications of them; propodeum very faintly reticulated, almost polished, with a very obscure median carina; forewing slightly shorter than the length of the insect, evenly rounded at apex; marginal and submarginal veins approximately equal, the former equal to two and one-half times the stigmal; abdomen short ovate, equal in length to the thorax, about four-fifths as broad as long, the dorsal segments weakly reticulately sculptured. Color aeneous-black; antennae brownish, the scape slightly paler; coxae and basal three-fourths of all femora concolorous with the thorax; remainder of legs very pale yellow, the tarsal claws brownish; wings hyaline, the venation brownish.

*Male*.—Length, 1 mm. Antennal flagellum shorter than the dorso-ventral height of head; scape somewhat thickened, especially at base, as long as pedicel and three first funicle joints combined, on the ventral margin with an elongate sensory pore which extends from apex almost to base and which under high magnification in balsam appears as a row of subquadrate cells along the ventral margin;

pedicel large, fully twice as long as the first funicle joint and equal to one-third the length of scape; ring-joints minute, number not determinable; funicle four-jointed, the joints all subequal and each slightly broader than long; club 3-jointed, ovate, slightly thicker and a little shorter than the funicle; abdomen elliptical, slightly less than twice as broad as long, narrower than the thorax but no longer; otherwise agrees with the female.

*Type-locality*.—South Bass Island, Ohio.

*Type*.—Cat. No. 26182, U.S.N.M.

Described from twenty-one females and six males mounted on card points, and twenty-four females and five males mounted in balsam on seven slides. This material all received from Miss Mary Auten, of Ohio University, and all reared by her from the egg capsules of the Arachnid, *Philodromus canadensis*, collected on South Bass Island in Lake Erie, during the month of July, 1921. In addition to the type material several hundred of unmounted specimens of this species were received from Miss Auten, all obtained from the same source. Six paratypes returned to Ohio University and two presented to the British Museum in London. Remainder of type material as well as a large part of the unmounted material retained in the National Museum.

#### TETRASTICHUS BLEPYRI Ashmead.

*Tetrastichus blepyri* ASHMEAD, Can. Ent., vol. 34, 1902, p. 302.

*Tetrastichus (Tetrastichodes) detrimentosus* GAHAN, Proc. U. S. Nat. Mus., vol. 46, 1913, p. 439.

*Tetrastichus blepyri* Ashmead was originally described from two specimens reared at Rosewell, New Mexico, by T. D. A. Cockerell as a secondary parasite of *Phenacoccus cavalliae* Cockerell. Its actual host is said to have been *Blepyrus phenacocci* Ashmead infesting the scale insect.

*T. detrimentosus* Gahan, the types of which are also in the national collection, was described from twenty specimens said to have been reared from *Coccinella sanguinea* at Lakeland, Florida, by G. G. Ainslie. A review of Ainslie's notes shows that *Homalotylus terminalis* (Say) was also present in this rearing under circumstances which make it highly probable that the *Homalotylus* was the actual host of the *Tetrastichus*.

The writer has more recently received two specimens reared at Murray, Utah, August 24, 1913, by P. H. Timberlake from *Microterys*, species infesting *Pulvinaria bigeloviae* Cockerell; two specimens reared from *Physokermes insignicola* (Crawford) at Santa Maria, California, in April, 1912, by Timberlake; one specimen from Alhambra, California, reared from *Saissetia olcae* (Bernard), by Harold Compere; two specimens reared at Arcadia, California, by

H. Compere, from *Saissetia oleae* upon which they were believed to be secondary; one specimen from Santa Maria, California, reared by H. Compere, from *Physokermes insignicola* and probably parasitic upon *Aphycus physokermes* Timberlake which was known to be present; and one specimen reared from *S. oleae* by H. S. Smith, in California, the exact locality not given.

Study of this new and better material in conjunction with the types has convinced the writer that *blepyri* Ashmead and *deterimentosus* Gahan are the same species.

The species is without much doubt normally a secondary parasite of various scale insects and Coccinellidae and appears to be quite widely distributed in North America and may also be found elsewhere.

## Superfamily SERPHOIDEA.

### Family SCELIONIDAE.

#### Subfamily BAEINAE

#### Genus BAEUS Haliday.

All descriptions apparently credit the wingless females of this genus with having the scutellum absent. As viewed by the writer this is not strictly true of the species standing under this name in the National Collection. The mesoscutum is large, occupying most of the thoracic dorsum, but between this sclerite and the abdomen are two transversely linear sclerites, variable in size but always discernible. These two plates apparently represent the scutellum and propodeum respectively. The anterior plate is usually somewhat longer (anteroposteriorly) than the posterior and the latter bears what appear to be the very minute spiracles.

#### BAEUS ROTUNDIVENTRIS, new species.

Very similar to *B. piceus* Ashmead but slightly larger, a little more strongly sculptured on thorax and abdomen, the abdomen more rotund, the antennal club blackish instead of reddish testaceous, and the head somewhat lighter in color. Also similar to *niger* Ashmead but may be distinguished at once by the broader and more rounded abdomen, which is more sparsely clothed with longer hairs, and by the somewhat longer though strongly transverse propodeal sclerite.

*Female*.—Lengths 0.8 mm. Wingless. Head, thorax, and abdomen more or less shining, but with distinct, fine reticulate sculpture and sparsely clothed with rather long hairs; eyes distinctly hairy; antennae 7-jointed, the club solid and longer than the funicle; first funicle joint the longest of the funicle joints, pedunculate at base; following joints of funicle slightly broader than long; pedicel large,

as long as the three succeeding funicle joints combined; scape slightly thickened and equal in length to the pedicel and funicle combined; thorax about as long as broad; abdomen much broader than the thorax, nearly circular in outline as viewed from above.

Head and prothorax dark reddish yellow; the vertex more or less infuscated; mesoscutum anteriorly usually more or less obscurely stained with reddish; remainder of thorax and abdomen entirely black; legs brownish mixed with yellowish without any very definite color pattern, the femora, apices of tibiae and the tarsi usually more or less yellowish; antennae dark brown.

*Male*.—Length 0.95 mm. Wings fully developed. Head transverse, weakly reticulated; occiput concave and margined at vertex; antennae 12-jointed, scape slightly expanded beneath; pedicel a little longer than the first funicle joint, which is distinctly longer than broad, narrower at base than at apex and the longest of the funicle joints; joints 4 to 10 of the antennae moniliform; joints 11 and 12 slightly longer and thicker and more closely joined together, forming a 2-jointed club; mesoscutum faintly reticulated and sparsely hairy; scutellum prominent, convex, broader than long, rounded behind and nearly smooth; propodeum rugulose, very short medially, sharply and perpendicularly truncate behind; abdomen shorter than the thorax and about as broad as the thorax, narrowed at base and broadest behind the middle; the first tergite longitudinally striate basally, smooth at apex; second tergite also striate at base, the apical two-thirds of second and all of the following tergites smooth; wings with rather coarse discal cilia; stigmal vein longer than the marginal; postmarginal subobsolete; basal vein present and distinct. Antennae and legs, except coxae, testaceous; head faintly piceous; thorax and abdomen black; wings hyaline.

*Type-locality*.—Middle Bass Island, Ohio.

*Type*.—Cat. No. 26183, U.S.N.M.

Described from twenty-one females and three males reared by Miss Mary Auten, July 4, 1921, from an unknown spider's nest taken under bark of a tree. Five female and one male paratypes in the collection of Ohio State University at Columbus, Ohio. Type, allotype, and sixteen paratypes in the United States National Museum. Antenna of type female on a slide.

### Subfamily TELENOMINAE.

#### *PHANURUS PROMACHIVORUS*, new species.

Very similar to *Phanurus tabanivorus* Ashmead but differs by having the first funicle joint twice as long as broad and only a little shorter than the pedicel, the elevation on the dorsum of first abdominal segment distinctly more prominent, and the forewings somewhat

more densely ciliated. The males differ from males of *tabanivorus* by having the first funicle longer than the pedicel, the second joint somewhat longer than first, the third subequal to the first, and the head, thorax and abdomen entirely black.

*Female*.—Length, 1.15 mm. Vertex and posterior orbits, finely reticulate-punctate, remainder of head smooth and polished; eyes not hairy; antennae 11-jointed, clavate; scape subcylindrical, as long as the pedicel and first three funicle joints combined; pedicel about twice as long as thick; first funicle joint more slender than the pedicel, about twice as long as thick and fully three-fourths as long as pedicel; second funicle joint slightly shorter than the first, third a little longer than broad, fourth about as long as broad; club 5-jointed, approximately equal in length to the pedicel and funicle combined, the first and second joints very slightly broader than long, third and fourth subquadrate, fifth longer than broad and conical; mesoscutum convex, sculptured like the vertex; scutellum smooth; propodeum broadly and deeply excavated for reception of the protuberance on first abdominal segment, only the lateral angles visible from above and these small and triangular; wings extending to the apex of abdomen and about one-third as broad as long; the marginal vein about two-thirds as long as the stigmal; postmarginal twice as long as stigmal; discal ciliation moderately dense; marginal cilia short, the longest cilia being at the posterior apical angle of wing; along the anterior margin of wing are about 28 nearly evenly spaced fine bristles between the base of submarginal and the apex of postmarginal veins; marginal cilia of hind wing equal to approximately two-thirds the width of wing; abdomen narrower than the thorax, pointed ovate, one-third longer than the head and thorax, abruptly narrowed beyond second segment, polished, the suture between first and second segments foveate; first segment broader than long with a prominent rounded protuberance above almost equal in height to the length of the segment; second segment comprising a little less than half the total length of abdomen; third segment narrower at base than the second at apex, the third and following segments gradually tapering toward apex of abdomen; ovipositor slightly exerted. Black; trochanters, all tibiae and all tarsi brownish testaceous, the apical joint of all tarsi dark and the front femora more or less brownish; antennae entirely black; wings hyaline.

*Male*.—Length 0.9 mm. Antennae 12-jointed, not clavate; scape as long as pedicel and two first funicle joints together; pedicel nearly twice as long as thick; first flagellar joint as long and as thick as the pedicel; second longer than the first; third subequal to the first; following joints moniliform and subquadrate, the apical joint longer than broad and ovate; wings extending beyond the apex of

abdomen; abdomen as long as the thorax and about as broad, ovate, the first tergite without a protuberance above and striated at base, suture between first and second tergites foveolate, second tergite occupying fully half the total length of abdomen, the tergites beyond the second short. Black; legs, except coxae, testaceous; coxae piceus; antennal scape testaceous; pedicel and flagellum dark brown.

*Type-locality*.—Koiwai, Japan.

*Type*.—Cat. No. 26184, U.S.N.M.

Eight females and seven males received through the U. S. Department of Agriculture, Bureau of Entomology, from C. P. Clausen, by whom they were reared from eggs of *Promachus yesonicus* Bigot, an Asilid fly inhabiting Japan.